REMARKS

This response is intended as a full and complete response to the Final Office Action mailed on November 2, 2007. In view of the following amendment and discussion, the Applicants believe that all claims are in allowable form.

CLAIM REJECTIONS

35 U.S.C. §103 Claims 1-4, 6, 8-12 and 15-17

Claims 1-4, 6, 8-12 and 15-17 stand rejected under 35 U.S.C. § 102(b) as being anticipated over *Xu* (EP 0758148) in view of *Sone* (US. Pat. 6,451,184) and further in view of *Gilboa* (US. Pat. 5,108,569). The Applicants respectfully disagree.

Independent claim 1 recites elements not taught or suggested by the combination of *Xu, Sone* and *Gilboa*. *Xu* teaches supplying a gas mixture into a chamber to deposit a TiN layer without collimated seed layer. The gas mixture is maintained in a space between the target and the substrate and reacts with the material sputtered from a target disposed in the chamber. *Xu* does not teach or suggest a second gas from a second inlet port supplying through a gap defined between a shield ring and a substrate support member, as recited by claim 1.

Sone teaches partitioning a gas space to have reactive gas contained between a partition member and a substrate and sputter gas contained between the partition and a target. The partition member has a plurality of apertures having different sizes and distributions utilized to confine the gases supplied into the chamber within a specific location, such as a specific location on a substrate or a target disposed in the processing chamber. The gases directed to the specific location in the chamber assists forming a film with good uniformity. The substrate is positioned on and held by a substrate holder 7. *Sone* does not teach or suggest a second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 1.

Gilboa teaches creating tortuous path by three cylindrical members 110, 120, 130, to direct gases into a center zone 100 defined within a processing chamber to prevent deposition on chamber walls. *See* Col. 9 Lines 8-14 of *Gilboa*. A clamping means 140 is positioned on an edge of a substrate support to better secure a substrate disposed on the substrate support. However, *Gilboa* does not teach or suggest a gap defined between a shield ring and the substrate support member, as recited by claim 1. The Applicants respectfully submit that the tortuous path as taught by *Gilboa* directs the gases to a center zone, which is a vast area within the processing chamber while the clamping means assisting holding the substrate securely on *Gilboa*'s substrate support. *Gilboa* does not teach or suggest introducing a second gas through a gap defined between a shield ring and a substrate support member.

The Examiner asserts that the motivation for utilizing the features of *Sone* is that it allows for producing an uniform film and the motivation for utilizing a shield ring and shield support member of *Gilboa* is that it allows for clamping the wafer to the substrate support. The Applicants respectfully disagree.

As admitted by the Examiner, the arrangement of the partition member disposed in *Sone*'s apparatus provides a good uniformity of films deposited on the substrate. However, the tortuous path defined by the three cylindrical members, as taught by *Gilboa*, is utilized to direct the gases to a vast center zone within the chamber, not a specific targeted spot, such as a spot on a substrate surface or a target, as taught by *Sone*. Therefore, there is no motivation, as asserted by the Examiner, to combine the tortuous path along with the clamping means of *Gilboa* defined by three cylindrical members into the partition member as taught by *Sone* as such modification will render *Sone*'s partition member unsatisfactory to its intended purpose.

The Examiner further asserts that the motivation for utilizing a shield ring and shield support member of *Gilboa* is to allow for clamping the wafer to the substrate support. First, *Gilboa* does not teach or suggest a shield ring and shield support member for clamping the wafer to the substrate support, as asserted by the Examiner. In contrast, *Gilboa* teaches a tortuous path defined by three cylindrical members and a separate clamping means to clamp a wafer. *Gilboa* does not teach or suggest a shield ring and shield support member, as asserted by the Examiner.

Second, there is no teaching, suggestion, or evidence provided by *Sone* suggesting that the substrate support of *Sone* needs to be modified. The Examiner has not provided rational underpinning for making such a modification. Accordingly, there is no teaching, suggestion, or evidence provided in *Sone*, or elsewhere, that would suggest one of ordinary skill in any manner to modify its substrate support to have a clamping means as taught by *Gilboa* into its substrate support. Additionally, there is no teaching, suggestion, or evidence provided in *Gilboa* to combine its clamping means into the substrate support as taught by *Sone* that would yield a second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 1.

Here, as there is no teaching, suggestion, or evidence provided in *Gilboa* or known to one skilled in the art suggesting to modify the substrate support as taught by *Sone* in a direction that would yield a second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 1, a *prima facie* case of obviousness has not been established.

Furthermore, even though the clamping means of *Gilboa* and the partition member of *Sone* could be combined into the teaching of *Xu*, the resultant depositing method would not yield a second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 1. As discussed above, neither *Xu, Sone* and *Gilboa,* teaches introducing a second gas introduced through an second inlet port disposed proximate a surface of substrate, wherein the second gas from the second inlet port supplied through a gap defined between a shield ring and a substrate support member, as claimed in the present application. Moreover, there is no motivation to modify *Sone* and *Xu* with the teachings of *Gilboa* in the manner as suggested by the Examiner since any such modification would render *Sone* unsatisfactory for its intended purpose.

Thus, the Applicants submit that independent claim 1 and all claims depending therefrom are patentable over *Xu* in view of *Sone* and further in view of *Gilboa*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims be allowed.

35 U.S.C. §103 Claim 7

Claim 7 stands rejected under 35 U.S.C. § 103 as being unpatentable over *Xu* in view of *Sone* and further in view of *Gilboa* and further in view of *Lantsman* (US. Pat. 5,830,330). The Applicants respectfully disagree.

Independent claim 1 recites elements not taught or suggested *Xu*, *Sone, Gilboa* and *Lantsman*. The patentability of claim 1 over *Xu*, *Sone* and *Gilboa* has been discussed above. *Lantsman* teaches ramping up a power to a target in a processing chamber. However, there is no teaching or suggestions from *Lantsman* that would suggest to one of ordinary skill in the art to *Xu, Sone* and *Gilboa* in a manner that would yield applying power to a sputtering target and a coil disposed between a sputtering target and a substrate positioned on a substrate support member in the presence of only a first gas, and introducing a second gas into a chamber to deposit metal containing film layers, wherein the second gas is introduced through an second inlet port disposed proximate a surface of the substrate in the presence of the power applied to the sputter target and the coil, wherein the second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 1.

Thus, the Applicants submit that claim 7 that depends from claim 1 is patentable over *Xu, Sone* and *Gilboa* and *Lantsman*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and claim 7 allowed.

35 U.S.C. §103 Claim 14

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu* in view of *Sone* and further in view of *Gilboa* and further in view of *Ngan* (US. Pat. 6,203,674). The Applicants respectfully disagree.

Independent claim 1 recites elements not taught or suggested by the combination of *Xu, Sone, Gilboa* and *Ngan*. The patentability of claim 1 over *Xu*, *Sone* and *Gilboa* has been discussed above. *Ngan* teaches using a target made by titanium. However, there is no teaching or suggestions from *Ngan* that would suggest to one of ordinary skill in the art to *Xu, Sone* and *Gilboa* in a manner that would yield applying power to a sputtering target and a coil disposed between a sputtering target and a

substrate positioned on a substrate support member in the presence of only a first gas, and introducing a second gas into a chamber to deposit metal containing film layers, wherein the second gas is introduced through an second inlet port disposed proximate a surface of the substrate in the presence of the power applied to the sputter target and the coil, wherein the second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 1.

Thus, the Applicants submit that submit that claim 14 that depends from claim 1 is patentable over *Xu, Sone, Gilboa* and *Ngan*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and claim 14 be allowed.

35 U.S.C. §103 Claim 18

Claim 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu, Sone, Gilboa* in view of *Chikako* (Japan 06-041733). The Applicants respectfully disagree.

Independent claim 1 recites elements not taught or suggested *Xu, Sone, Gilboa* and *Chikako*. The patentability of claim 1 over *Xu, Sone* and *Gilboa* has been discussed above. *Chikako* teaches introducing reactive gas through a central portion of a substrate holder disposed in a processing chamber. However, there is no teaching or suggestion from *Chikako* that would suggest to one of ordinary skill in the art to *Xu*, *Sone* and *Gilboa* in a manner that would yield applying power to a sputtering target and a coil disposed between a sputtering target and a substrate positioned on a substrate support member in the presence of only a first gas, and introducing a second gas into a chamber to deposit metal containing film layers, wherein the second gas is introduced through an second inlet port disposed proximate a surface of the substrate in the presence of the power applied to the sputter target and the coil, wherein the second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 1.

Thus, the Applicants submit that claim 18 that depends from claim 1 is patentable over *Xu, Sone, Gilboa* and *Chikako*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and claim 18 be allowed.

35 U.S.C. §103 Claims 19-22, 24 and 26

Claims 19-22 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu* in view of *Sone* and in view of *Yamaguchi* (U.S. Patent 6,203,674) and *Gilboa*. The Applicants respectfully disagree.

Independent claim 19 recites elements not taught or suggested *Xu, Sone, Yamaguchi* and *Gilboa*. The teachings of *Xu, Sone* and *Gilboa* have been discussed above. *Yamaguchi* teaches depositiong a TiN film by sputtering a target containing Ti. However, there is no teaching from *Yamaguchi* that would suggest to one of ordinary skill in the art to modify *Xu, Sone,* and *Gilboa* in a manner that would yield creating a higher partial pressure of an active gas introduced through a second inlet port disposed proximate an upper surface of a substrate than at a sputtering target to deposit metal containing film layers in the presence of the power applied to the sputter target and the coil, wherein the active gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 19. As such, a *prima facie* case of obviousness has not been established as the references fail to teach or suggest each claimed element.

Thus, the Applicants submit that independent claim 19 and claims 20-22 and 26 depending therefrom are patentable over *Xu, Sone, Yamaguchi* and *Gilboa*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims be allowed.

35 U.S.C. §103 Claim 23

Claim 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu* in view of *Sone* and in view of *Yamaguchi* and *Gilboa* and further in view of *Ngan*. The Applicants respectfully disagree.

Independent claim 19 recites elements not taught or suggested *Xu, Sone, Gilboa,* and *Yamaguchi* and further in view of *Ngan*. The patentability of claim 19 over the combination of *Xu*, *Sone, Gilboa* and *Yamaguchi* has been discussed above. *Ngan* teaches using a target made by titanium. However, there is no teaching from *Ngan* that would suggest to one of ordinary skill in the art to modify *Xu*, *Sone Yamaguchi* and *Gilboa* in a manner that would yield creating a higher partial pressure of an active gas

introduced through a second inlet port disposed proximate an upper surface of a substrate than at a sputtering target to deposit metal containing film layers in the presence of the power applied to the sputter target and the coil, wherein the active gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 19. As such, a *prima facie* case of obviousness has not been established as the references fail to teach or suggest each claimed element.

Thus, the Applicants submit that claim 23 that depends from claim 19 is patentable over *Xu, Sone, Yamaguchi, Gilboa* and further in view of *Ngan*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and claim 23 be allowed.

35 U.S.C. §103 Claim 25

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu* in view of *Sone* and in view of *Yamaguchi* and *Gilboa* and further in view of *Chikako*. The Applicants respectfully disagree.

Independent claim 19 recites elements not taught or suggested *Xu, Sone, Gilboa, Yamaguchi* and further in view of *Chikako*. The patentability of claim 19 over the combination of *Xu*, *Sone, Yamaguchi* and *Gilboa* has been discussed above. *Chikako* teaches introducing reactive gas through a central portion of a substrate holder disposed in a processing chamber. However, there is no teaching from *Chikako* that would suggest to one of ordinary skill in the art to modify *Xu*, *Sone, Gilboa,* and *Yamaguchi* in a manner that would yield creating a higher partial pressure of an active gas introduced through a second inlet port disposed proximate an upper surface of a substrate than at a sputtering target to deposit metal containing film layers in the presence of the power applied to the sputter target and the coil, wherein the active gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 19. As such, a *prima facie* case of obviousness has not been established as the references fail to teach or suggest each claimed element.

Thus, the Applicants submit that claim 25 that depends from claim 19 is patentable over *Xu, Sone, Gilboa* and *Yamaguchi* and further in view of *Chikako*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and claim 25 be allowed.

35 U.S.C. §103 Claim 27

Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu* in view of *Sone* and in view of *Ngan* and in view of *Yamaguchi* and *Gilboa*. The Applicants respectfully disagree.

Independent claim 27 recites elements not taught or suggested *Xu, Sone, Ngan, Yamaguchi* and *Gilboa*. The teachings of *Xu*, *Sone* and *Gilboa* have been discussed above. *Yamaguchi* teaches depositing a TiN film by sputtering a target containing Ti. *Ngan* teaches using a target made by titanium. However, there is no teaching from *Ngan* and *Yamaguchi* that would suggest to one of ordinary skill in the art to *Xu, Sone* and *Gilboa* in a manner that would yield creating a higher partial pressure of nitrogen through a second inlet port disposed proximate an upper surface of a substrate than at a sputtering target to deposit metal containing film layers in presence of power applied to the sputter target and the coil, wherein the nitrogen from the second inlet port is supplied through a gap defined between a shield ring and a substrate support member, as recited by claim 27. As such, a *prima facie* case of obviousness has not been established as the references fail to teach or suggest each claimed element.

Thus, the Applicants submit that independent claim 27 is patentable over *Xu, Sone, Ngan* and further in view of *Yamaguchi* and *Gilboa*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and claim 27 be allowed.

35 U.S.C. §103 Claims 28-31

Claims 28-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu* in view of *Sone* and in view of *Takehara* (U.S. Patent 5,340,459) and further in view of *Yamaguchi* and *Gilboa*. The Applicants respectfully disagree.

Independent claim 28 recites elements not taught or suggested *Xu, Sone, Takehara, Yamaguchi* and *Gilboa*. The teachings of *Xu, Sone* and *Gilboa* have been discussed above. *Takehara* teaches a pipe adapted to introduce gas into a processing chamber near a substrate. *Yamaguchi* teaches depositiong a TiN film by sputtering a target containing Ti. However, there is no teaching from *Takehara* and *Yamaguchi* that would suggest to one of the ordinary skill in the art to *Xu*, *Sone* and *Gilboa* in a manner that would yield introducing a second gas into the chamber through a second inlet port disposed proximate the upper surface of the substrate to deposit the metal containing film layers in the presence of the power applied to the sputter target and the coil, wherein the second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support member, as recited by claim 28. As such, a *prima facie* case of obviousness has not been established as the references fail to teach or suggest each claimed element.

Thus, the Applicants submit that independent claim 28 and claims 29-31 depending therefrom are patentable over *Xu, Sone, Takehara* and further in view of *Yamaguchi* and *Gilboa*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims be allowed.

35 U.S.C. §103 Claim 32

Claim 32 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Xu* in view of *Sone* and in view of *Takehara* and in view of *Yamaguchi* and *Gilboa* and further in view of *Ngan*. The Applicants respectfully disagree.

Independent claim 28 recites elements not taught or suggested *Xu, Sone, Takehara, Yamaguchi, Gilboa* and *Ngan*. The teachings of *Xu, Sone, Takehara*, *Yamaguchi* and *Gilboa* have been discussed above. *Ngan* teaches using a target made by titanium. However, *Ngan* fail to teach or suggest a modification to *Xu, Sone, Takehara*, *Yamaguchi* and *Gilboa* that would yield introducing a second gas into the chamber through a second inlet port disposed proximate the upper surface of the substrate to deposit the metal containing film layers in the presence of the power applied to the sputter target and the coil, wherein the second gas from the second inlet port is supplied through a gap defined between a shield ring and the substrate support

member, as recited by claim 28. As such, a *prima facie* case of obviousness has not been established as the references fail to teach or suggest each claimed element.

Thus, the Applicants submit that claim 32 that depends from is patentable over *Xu, Sone, Takehara, Yamaguchi* and *Gilboa* and further in view of *Ngan*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and claim 32 be allowed.

CONCLUSION

Thus, for at least the reasons discussed above, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and swift passage to issue are earnestly solicited.

If the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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Date

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